

## ON THE INVESTIGATION OF THE SECOND POWELL MOUND

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### ABSTRACT

This report discusses briefly an attempt to apply soil chemistry to the study of the mound structure of the second Powell Mound. The work was done in cooperation with Doctor Kelley of the University of Illinois.

The main feature of this mound was a dark-colored, fine silty clay soil material making up the bulk of the mound which rested on a natural sand base. This was covered by a shallow sandy material, not included in the investigation because of its disturbed condition. The soil material has been undisturbed since it was laid down, except in the dyke formations found cutting through the mound. Vertical samples from the top to the base of the undisturbed soil material were taken for study. A slight columnar structure had developed in the upper part of the soil material.

The replaceable base content of the whole profile varied from 20 milliequivalents per hundred grams of soil in the surface to 22 in the soil just above the sand floor. The pH for the whole profile was around 7.0. This shows no leaching profile but is evidence for the original uniformity of the whole soil material. This uniformity makes possible the interpretation of the organic-matter study.

The organic nitrogen content showed a variation with depth from 0.086 per cent nitrogen in the top of the soil material to 0.113 per cent in the bottom of the soil material. The organic carbon varied similarly.

This is the reverse of a regular soil profile and is chemical evidence that the mound was built up by man and has since weathered to form the organic-matter curve found. This organic-matter curve is a result of many factors, among which time is of greatest importance. Although no definite length of time can be associated with this one curve, there is a possibility that relative age can be established on mounds built of fairly uniform material by comparing the nature of the curves obtained. The careful vertical sampling of mound material as a regular part of mound study is recommended.

The question as to whether the dyke formations were recent or not has been raised. If recent, the organic matter curve for a vertical sampling of the dyke material would be erratic. If they were cut through the mound shortly after the mound was built this curve would follow the curve of the undisturbed portion of the mound. Unfortunately no dyke samples were taken.

This emphasizes the importance of taking vertical samples from all structural features within the mound.